Unit 1 – Day 2: Guided Notes

Name: Answer Key

System-of-Equations Word Problems

Example 1: A test has twenty questions worth 100 points. The test consists of True/False questions worth 3 points each and multiple choice questions worth 11 points each. How many multiple choice questions are on the test?

$$\begin{cases} m + t = 20 \\ 11m + 3t = 100 \end{cases}$$

multiple choice = 5 questions
true/false = 15 questions

Example 2: The senior classes at Panther Creek High School and Enloe HS planned separate trips to New York City. The senior class at PCHS rented and filled 1 van and 6 buses with 372 students. EHS rented and filled 4 vans and 12 buses with 780 students. Each van and each bus carried the same number of students. How many students were in each vehicle?

$$\begin{cases} 1v + 6b = 372 \\ 4v + 12b = 780 \end{cases}$$

vans = 18 students
bus = 59 students

Example 3: Matt and Ming are selling fruit for a school fundraiser. Customers can buy small boxes of oranges and large boxes of oranges. Matt sold 3 small boxes of oranges and 14 large boxes of oranges for a total of $203. Ming sold 11 small boxes of oranges and 11 large boxes of oranges for a total of $220. Find the cost each of one small box of oranges and one large box of oranges.

$$\begin{cases} 3s + 14l = 203 \\ 11s + 11l = 220 \end{cases}$$

Small box = $7.00
large box = $13.00

Graphing Linear Inequalities

We show the solution to a linear inequality with a graph

Step 1) Put the inequalities into slope-intercept form.

Step 2) Graph the lines using the y-intercept and slope

- If the inequality is < or >, make the lines dotted
- If the inequality is ≤ or ≥, make the lines solid

Step 3) shade the correct region of the graph:

- Shade above the line for $y >$ or $y \geq$
- Shade below the line for $y <$ or $y \leq$

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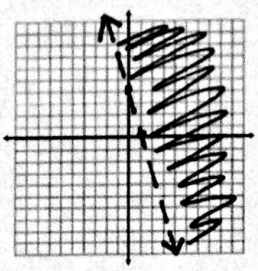
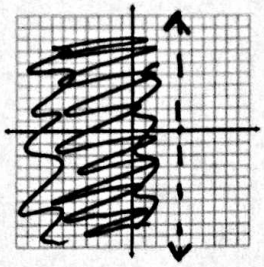
Examples: Sketch the following inequalities on a graph

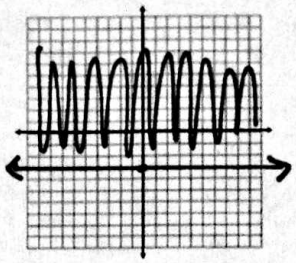
1. $y > -5x + 4$
2. $x < 4$
3. $y \geq -3$
4. $2x - 3y \leq 6$

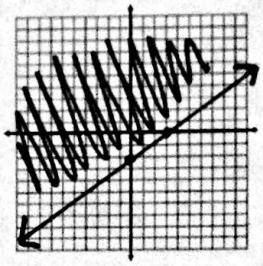
$-3y \leq -2x + 6$ *flip sign!

$y \geq \frac{2}{3}x - 2$









Example: Solve the following system of Inequalities:

$$\begin{cases} 3x + 4y > -4 \\ x + 2y < 2 \end{cases}$$

Put In Slope Intercept Form:

$3x + 4y > -4$

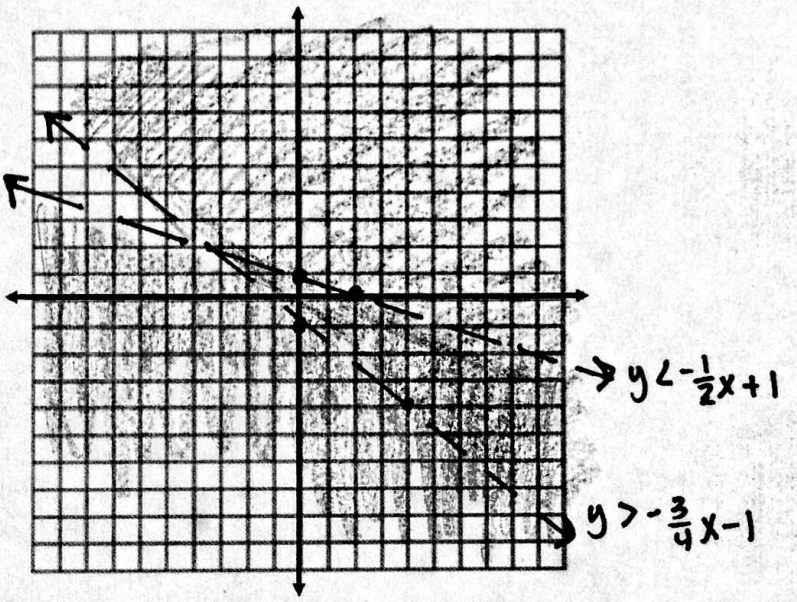
$4y > -3x - 4$

$y > -\frac{3}{4}x - 1$

$x + 2y < 2$

$2y < -x + 2$

$y < -\frac{1}{2}x + 1$



Check your solution:

You Try!

$$\begin{cases} x + 2y \geq -12 \\ -3x + y < 8 \end{cases}$$

$x + 2y \geq -12$

$2y \geq -x - 12$

$y \geq -\frac{1}{2}x - 6$

$-3x + y < 8$

$y < 3x + 8$